

# Background Experiences and Dispositions of Teachers that Predict Student Outcomes in Elementary Schools

Dissertation

By

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Submitted to the Department of Educational Leadership and Policy Studies and the faculty of the  
Graduate School of the University of Kansas in partial fulfillment of the requirements for the  
Degree of Doctor of Education

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### Abstract

The impact a teacher's background experiences and dispositions have on student performance, as measured by criterion-referenced state assessments in communication arts for grades three through five, were determined. The following background experiences were found to predict least effective teachers with 85% accuracy: rank of the undergraduate institution attended, cumulative grade point average as an undergraduate, years of teaching experience, level of advanced degree, and scores on state certification examinations. In addition, the impact of "years of teaching experience" on student performance on state assessments was found to be significant.

*Keywords:* background experiences, criterion-referenced, dispositions, state assessments, teacher, teacher effect.

## Acknowledgements

There are a few people I wish to acknowledge for their support throughout this doctoral dissertation process. First, I acknowledge my supportive and loving family from whom I draw inspiration. My wife, Karen, has been supportive and patient throughout this process. She challenges me to aim high. Our children, Brooke and Logan, inspire me through their passionate pursuit of new adventures and through the exploration and development of their talents. My parents and most important teachers, Bill and Bonnie Welle, instilled in me the belief that I could achieve anything I set my mind to.

Dr. Howard Ebmeier has graciously served as my advisor and committee chairperson. He gave me the support and feedback to make this a dissertation-quality study that is meaningful to practitioners, while insisting that this journey be my own.

Dr. Lynnette Calder paved the way for me in our cohort and gave me the tips and encouragement to make this study manageable. She gave me the confidence to pull the research together in a practical format for others.

There have been many amazing teachers who have inspired and encouraged me and whose high expectations and genuine interest in my success have made all the difference. I remember each of them for how they invested in me. I want each to know their work has made a difference. It is my hope that this study leads to more effective practices in the hiring of teachers that will lead to the success of more students.

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## **Introduction**

Many variables contribute to student success in school, but none perhaps as important as the role of the teacher. Teachers inspire, instruct, and guide their students' development of knowledge and skills as they grow into young adulthood. The impact a teacher has on his or her students, termed "teacher effect," has been the focus of much study over the past fifty years (Blanton, Sindelar, & Correa, 2006, National Commission on Teaching and America's Future (NCTAF), 2004).

This study seeks to determine the impact a teacher's background experiences and dispositions have on student learning. Armed with the most accurate information on what it takes to be an effective teacher, hiring officials can use this information to improve the screening and hiring practices designed to select the highest quality teachers for their schools.

### **Teacher Effect**

In the 1960's, studies on the qualities of great teachers began to focus on the relationship between the actions of the teacher and the subsequent learning by the student. Applying this process-product approach to studying the relationship between teaching and learning, also referred to as "teacher effect," was based on behavioral psychology and child development (Blanton et al., 2006). Research in the areas of special education and general education led to findings that impact teaching and teacher training programs to this day. For example, these studies revealed that student outputs were impacted by teachers' instructional decisions, or pedagogy, to effectively: "teach classroom rules and monitor expectations, provide clear expectations and ample instructional time, maximize the opportunity for students to respond during instruction and seatwork, use a brisk pace to present lessons and present new material in small steps, and provide regular feedback" (Blanton et al., 2006).

The release of the Coleman Report by the Carnegie Corporation of New York in 1966 downplayed the impact of teachers on students' learning; instead suggesting the child's family background was the most important factor determining student success and credited very little impact on student achievement to what happens in school. The Coleman Report inspired important initiatives such as Head Start, but placed the emphasis on family while minimizing the significance of the teacher's impact on student learning (NCTAF, 2004).

The 1970's brought a renewed interest in process-product research. Research on the impact of teacher, classroom, and school factors on student outcomes were referred to as "learning-to-teach research," "classroom ecology research," or "interpretive research" (Blanton et al., 2006). Implications for teacher background experiences, such as years of teaching experience; and matters of pedagogy, including the study of the influence of planning and other decision making by teachers on student outcomes became more evident in the research. The dispositions of teachers, such as teacher thinking and teacher beliefs, were also explored (Blanton et al., 2006).

In the past 25 years, greater research attention has been given to the importance of the background experiences of teachers such as the impact of teaching experience, pre-service preparation and degrees, and certification. Increasingly, researchers are finding it is the quality of the teachers that have the greatest impact on learning (NCTAF, 2004; Blanton et al., 2006).

Much has been written in the past ten years on the impact classroom teachers have on the learning of their students. This increased interest in teacher effect has likely been in response to the No Child Left Behind Act (NCLB) of 2001. Former Secretary of Education Robert Paige, in his 2003 annual report on teacher quality, used teacher effect to justify changes to policy with

NCLB, such as a “highly qualified teachers” in every classroom, declaring “teacher quality is the primary factor in determining student achievement” (Paige, 2003).

The most recent research reinforces the idea that the teacher to whom a student is assigned had a positive impact on the achievement of that student (Wayne & Youngs, 2003; Rowan, Correnti, & Miller 2002; Nye, Konstantopoulos, and & Hedges, 2004; Odden, Borman, & Fermanich, 2004; Darling-Hammond & Youngs, 2002; Carlsom, Lee, & Schroll, 2004; Logerfo, 2006). Reporting on a series of large-scale survey research studies using a cross-classified random effects model, Rowan et al. (2002), found the impact of teacher effect on student achievement was substantial, with effect sizes ranging from .77 to .78 in reading growth. “The classrooms to which students were assigned in a given year accounted for roughly 60-61% of the reliable variance in the students’ rates of academic growth in reading achievement (depending on the cohort), and 52-72% of the reliable variance in students’ rates of academic growth in mathematics achievement” using the cross-classified random effects model of analysis (Nye et al., 2004). The importance of a student’s teacher assignment had even more influence on the gains of the student than class size and the composition of the class (Darling-Hammond & Youngs, 2002).

These findings suggest some students made less progress due to their chance placement in the classroom of a teacher who is less effective (Rowan et al., 2002). A report published in 1997 by the National Commission on Teaching and America’s Future revealed differences in teacher qualifications, including scores on a licensing examination, master’s degree, and experience, accounted for more than 90% of the variation in student achievement between high-achieving and low-achieving schools in New York City in reading and mathematics at all tested grade levels (NCTAF, 1997). The same report cited a Tennessee study on the effects teachers

had on student learning: “...elementary school students who are assigned to ineffective teachers for three years in a row score significantly lower on achievement tests than those assigned to the most effective teachers over the same period of time” (NCTAF, 1997).

Specific factors believed to significantly impact student learning included the curriculum that was taught, how that curriculum was taught, the quality of the individual doing the teaching, and the instructional environment of the school and classrooms where the instruction took place (Odden, Borman, & Fermanich, 2004). Odden et al. (2004) argued that certain teacher background experiences had various degrees of impact on student outcomes and recommended further study. Such background experiences included graduation from a high-quality university, performance on licensure examinations, a degree in the field of teaching – particularly for math teachers, and years of experience in teaching.

The findings of Rowan et al. (2002) indicated that the impact of teacher effect on gains in reading and math achievement for elementary school students were substantial. These researchers determined there were several factors relating to background experiences and decisions of pedagogy that contributed to the differences in teacher effect, including: “professional preparation and content knowledge, use of teaching routines, and patterns of content coverage, with effect sizes for variables measuring these background experiences of teachers and their instructional decisions in the range of 1.0” (Rowan et al. 2002).

Understanding the influence of teacher effect on student learning has been proven significant across students of diverse backgrounds. When teacher effect is normally distributed, the findings of Nye et al. (2004) suggest “the difference in achievement gains between having a 25<sup>th</sup> percentile teacher (a less effective teacher) and a 75<sup>th</sup> percentile teacher (a more effective teacher) is over one third of a standard deviation (0.35) in reading and almost half a standard



deviation (0.48) in mathematics. Similarly, the difference in achievement gains between having a 50<sup>th</sup> percentile teacher (an average teacher) and a 90<sup>th</sup> percentile teacher (a highly effective teacher) was about one third of a standard deviation (0.33) in reading and somewhat smaller than half a standard deviation (0.46) in mathematics” (Nye, et al. 2004).

## **Summary**

Each school year, more than one hundred thousand new teachers begin their work as new classroom teachers in this country. The degree to which these thousands of teachers are prepared to be successful in helping their students learn varies greatly (Darling-Hammond & Baratz-Snowden, 2007).

To what extent are the qualities of an effective teacher predictable prior to the hiring of a prospective teacher? The purpose of this study was to determine what aspects of a teacher’s background experiences and dispositions during the application and interview process can be used as predictors for the success of future students. This study provided human resource managers information to improve their ability to identify the best teachers by determining the relationship the following background experiences have on student outputs: rank of the undergraduate institution attended, cumulative grade point average as an undergraduate, years of teaching experience, level of advanced degree, and scores on state certification examinations. In addition, the impact teacher dispositions, as measured by the Teacher Perceiver Interview (TPI), have on student outcomes was also measured.

## **Review of Literature**

### **Teacher Background Experiences**

Teacher background experiences are those aspects of a person’s preparation for teaching involved in pre-service and in-service training. For the sake of this study, research on teacher

background experiences was organized into the following categories: rank of the teacher training program, undergraduate grade point average, years of teaching experience, score on a teacher licensure exam, and advanced degree.

### **Teacher training programs.**

The college or university teacher training program one attends as an undergraduate student has been found to impact that teacher's effectiveness with students (Odden et al. 2004; Darling-Hammond, 1999, Darling-Hammond & Youngs, 2002, Podgursky, 2005, Wayne & Youngs, 2003). Darling-Hammond and Youngs (2002) cited findings that the contributions of teacher qualifications, as well as other school inputs and student background experiences, had a positive impact on student performance as measured in several states on the National Assessment of Educational Progress (NAEP) in 1990, 1992, 1994, and 1996 in the subjects of reading and math, controlling for both student poverty and student language background. This review of 57 studies published since 1980 in peer-reviewed journals included controls for students' socioeconomic status and prior academic performance.

Secondary students performed significantly higher in mathematics when their teacher was degreed and certified in mathematics (Goe, 2007; Odden et al., 2004; NCTAF, 2004). Eighth grade students, for example, were found to perform at higher levels on the NAEP mathematics assessments when their teacher held a major or minor in mathematics. These teachers were found to more likely engage their mathematics students in more hands-on learning that emphasized higher order thinking skills, had more training in supporting students with diverse backgrounds and needs, and were better prepared overall to support higher order thinking skills in students. Similarly, students of teachers who majored in science or science education with

more training in promoting laboratory skills and hands-on learning performed better on the NAEP science assessments.

According to Darling-Hammond & Baratz-Snowden (2007), traditional teacher preparation programs were criticized for emphasizing theory while lacking practical training. Teacher education institutions began to re-design their programs in the 1980's to emphasize a more comprehensive approach, including training and experiences in pedagogy and by aligning the student teaching experience with course work. Such changes were intended to "help teachers learn to think pedagogically, reason through dilemmas, investigate problems, and analyze student learning to develop appropriate curriculum for a diverse group of learners" (Darling-Hammond & Baratz-Snowden, 2007).

Emphasizing the importance of pedagogy in teacher training programs was supported by the findings of Boe, Shin, and Cook (2007) and Delli, Edwards, and Murphy (2004). Extensive training in pedagogy and practice teaching was found to produce "beginning teachers who were fully certified, secured in-field teaching assignments, and reported being well prepared to teach subject matter and well prepared with respect to pedagogical skills." (Boe, Shin, & Cook, 2007)

Student teaching is an important component of a teacher's pre-service training in pedagogy, yet studies on the scores student teachers receive revealed limited predictability of success in teaching (Brucklacher, 1998). Brucklacher (1998) warned of "bias by the cooperating teachers as raters, problems with the instruments used to evaluate student teachers, and a climate in which cooperating teachers feel they are expected to give their student teachers high marks" were all found to be limiting factors for the use of student teaching scores to predict future student achievement.

### **Grade point average.**

If a teacher's performance as an undergraduate student were predictive of their success as a teacher, then hiring officials would have an important screening tool in the grade point average (GPA) of perspective teachers. Under some circumstances, GPA has been shown to predict the ratings of pre-service and in-service teachers (Brody, 1969; Pigge, 1968). The GPA of student teachers was predictive of ratings of the student teachers by high school students when GPA was factored with other measures of intellectual ability, and when raters were sorted by college bound and non-college bound students (Brody, 1969).

A teacher's undergraduate GPA also predicted the rating given by the teacher's principal/supervisor in elementary schools (Pigge, 1968). Using a 6-point rating scale of their teachers, elementary school principals rated "A" teachers, with a cumulative undergraduate GPA between 3.20 and 4.00 on a 4.00 scale, significantly higher than "C" teachers, with a GPA between 2.00 and 2.50, in four of eight traits of personal characteristics: "physical health and energy, use of good judgment and tact, friendliness, and interest and enthusiasm" (Pigge, 1968). "A" teachers also received significantly higher ratings in two of three traits of teacher-staff relations: "relationship with staff members, secretaries, and custodians," and "conformance with authorized policies and procedures" (Pigge, 1968). Significant differences were also identified by principal ratings on four of eleven traits of instructional skills and management: "knowledge of subject matter, evidence of effective planning, thoroughness in teaching, and shows resourcefulness" (Pigge, 1968). In the area of professional attitudes and growth, "A" teachers were rated significantly higher in: observance of ethics in teaching profession, effort made to improve classroom methods and techniques, promptness and accuracy with reports, and evaluates himself" (Pigge, 1968). The final trait in the Pigge (1968) study asked principals to

“consider total effectiveness in guiding pupil growth” was rated significantly higher for “A” teachers than “C” teachers. Of the 32 traits in the study, the two with the strongest significance to GPA were “use of good judgment and tact,” and “knowledge of subject matter” (Pigge, 1968).

There were limits to the predictive qualities of GPA scores. James & Dumas (1976) found that GPA predicted student teaching performance, with the strongest predictive significance in student teachers with the lowest GPA's. The predictive significance decreased as GPA rose. When student teaching grade was used as the criterion variable, GPA became insignificant in predicting success in student teaching when the GPA is higher than 2.30. When a cooperating teacher rating of the student teacher was the criterion variable, GPA became insignificant in predicting success in student teaching when the GPA was higher than 2.90 (James & Dumas, 1976).

More recently, in a meta-analysis of studies of teacher test scores and GPA as predictors of teacher performance, D'Agostino & Powers (2009) found that GPA, especially student teaching GPA, predicted teaching success and served as a stronger predictor than teacher tests of certification. “Student teaching GPA led to a .16 overall larger effect compared to all other indicators combined” including teacher test scores, overall GPA, student teaching GPA, educational major GPA, teaching level, and service level, on supervisor ratings, student achievement, student ratings (D'Agostino & Powers, 2009). Overall GPA, student teaching GPA, and educational major GPA, when combined, “yielded a .11 greater effect than all teacher tests combined, which was statistically significant,  $p < .01$ ” (D'Agostino & Powers, 2009). These researchers were surprised by the significance of GPA, yet drew a distinction between measures of effective teaching, cautioning “that teachers with higher test scores or GPA's were no better at

facilitating student learning than teachers with lower scores on those indicators” (D’Agostino & Powers, 2009), highlighting the need for further study.

### **Teaching experience.**

The impact a teacher’s experience has on student learning has been widely studied and is found to have a positive impact on student learning, especially in the first few years of a teacher’s career (Goe, 2007; Sion, 2004; NCTAF, 1997; Odden et al., 2004; Darling-Hammond & Youngs, 2002). Goe (2007), through a synthesis of research, found that teacher experience matters most in the first four to five years of teaching. Teachers appear to make the most improvement in teaching effectiveness during the first few years, which has been found to make a positive impact on student achievement. Experience beyond the fifth year appeared to contribute little or no additional benefit to student performance (Goe, 2007). Others found that the increase in teacher effectiveness had little additional impact after the third year (Odden et al., 2004). In addition, Darling-Hammond and Young (2002) found the gains in the first few years of a teacher’s career to have the most impact in the elementary grades.

The National Commission on Teaching and America’s Future (NCTAF) reported that when teaching experience was combined with a master’s degree and scores on licensing examinations, these teacher background experiences accounted for about 40% of measured variance in student learning using measures of reading and math achievement in grades one through eleven, more than any other variable. After controlling for socioeconomic status, the differences in performance between black students and white students, this study involving 900 Texas school districts, were almost entirely accounted for by differences in teacher experience, education, and exam scores (NCTAF, 1997).

Other researchers were more reluctant to draw such conclusions about the relationship between experience and student performance either because the experience data is difficult to interpret, (Carlsom, Lee, & Schroll, 2004) or the findings did not support such a claim (Gallagher, 2004; Kimball, White, Milanowski, & Borman, 2004; Nye, et al. 2004). Carlsom et al. (2004) cited concerns that with experience comes other background experiences, such as in-service training, that were difficult to isolate for study (Carlsom et al., 2004), and Gallagher (2004) found experience to be insignificant in relationship to student achievement. Although able to conclude teacher effect is important, Nye et al. (2004) were less successful in isolating specific background experiences in teachers that consistently predicted teacher effectiveness.

### **Licensure.**

According to Darling Hammond (1999), “not only do U.S. students appear to perform least well in the fields in which U.S. teachers are least well prepared (math and physical science), the states that repeatedly lead the nation in student achievement in mathematics and reading have among the most highly qualified teachers in the country and have made longstanding investments in the quality of teaching” (Darling-Hammond, 1999). Although secondary students in the U.S. scored below the median in international mathematics and science assessments, students in some states scored as high as those in the top-ranked countries in the world while students in others scored among the bottom-ranked (Darling-Hammond, 1999). Students in the U.S. also performed relatively better in some fields than others. For example, U.S. students’ scores compared favorably with students in other countries in reading and near the median in general science. However, U.S. students performed much more poorly in mathematics and physical science. These differences in rankings parallel the differences in teacher qualifications in these fields. Darling-Hammond (1999) found that more than 95% of elementary school

teachers were fully certified. Roughly 18% of U.S. middle school and high school general science and biology were uncertified or certified in other fields. Their students performed near the median on international assessments. By contrast, 30% of U.S. high school mathematics teachers and 50% of high school physical science teachers had less than a minor in their field and many were uncertified. Students' scores in these fields fell well below the international norms (Darling-Hammond, 1999).

A representative sample of 1,475 special education teachers was involved in a national study conducted to test five teacher quality factors: experience, credentials, self-efficacy, professional activities, and selected classroom practices. Three of these factors: experience, credentials, and professional activities, align with the definition of "background experiences" for the purpose of this study. Combined, the five factors of the study were determined to have a significant impact on the learning outcomes in students (Carlsom et al., 2004). However, the impact of each factor in isolation was not determined. In general, the greatest student gains were demonstrated as a result of instruction from teachers who tended to be more academically capable as measured by their scores on licensure exams and tests of verbal ability. These teachers with the higher student gains also tended to have attended more selective colleges. It was unclear whether this reflects the quality of the undergraduate program in which they received their training or their college entrance exams aptitude scores. Other researchers have found the significance of teacher licensure to be insignificant to student performance outputs, (Gallagher, 2004; Podgursky, 2005) or little relationships between elementary certification and student achievement (Carlsom et al., 2004).

Other researchers have found the relationship between specific characteristics and student achievement to be mixed (Odden et al., 2004; Wayne & Youngs, 2003). Wayne and Youngs



(2003) claimed the teachers' college rating and test scores did have a positive impact on student achievement, but findings on degrees earned, coursework, and certification were inconclusive. Results were more conclusive in mathematics, however, where teachers with certification in mathematics, mathematics-related degrees, and coursework in mathematics were found to have a measurable impact on learning (Wayne & Youngs, 2003).

### ***Praxis II.***

Passage of the Praxis II test was required by the Missouri Department of Elementary and Secondary Education for colleges and universities to measure the readiness of potential teachers completing teacher preparation programs. Missouri was one of approximately forty states who required meeting minimum standard scores on the Praxis II to be licensed to teach in their state.

The Praxis II was published by Educational Testing Services (ETS) and includes multiple-choice and essay questions that measured knowledge of content and pedagogy believed necessary for a new teacher. The tests were developed by first conducting job analysis surveys to determine what a representative group of teachers and teacher educators believe a newly licensed teacher should know to be competent in their role as a teacher. An advisory committee of educators defined the content to be assessed on the test based on the results of this survey and national standards. Test specifications were created and test questions were developed. ETS claimed to follow procedures to ensure validity and reliability (ETS: The Praxis Series, 2010).

### **Advanced degree.**

Research on the impact an advanced degree has on student performance was not generally found to reveal a significant relationship between these variables. Having majored in the field of study and being fully certified, especially for secondary mathematics teachers, served as a better predictor of student success compared to the level of degree earned. Some researchers

theorized that this was because many advanced degrees, such as administration, were not directly related to instructional practice (Darling-Hammond, 1999).

Others researchers found that high school math students learned more from teachers with advanced degrees in mathematics than math students whose teachers had advanced degrees in non-math subjects. These results controlled for teacher certification and years of high school teaching experience (Wayne & Youngs, 2003).

Findings by Hanushek (1997) were less encouraging for the impact a teacher's advanced degree has on student learning. "It is just as likely that a teacher with a bachelor's degree will elicit high performance from students as a teacher with a master's degree." The percentage of teachers with master's degrees doubled between 1960 and 1990, without a comparable increase in student achievement (Hanushek, 1997).

### **Teacher Dispositions**

A teacher's dispositions, those aspects of the belief system that served as the foundation for the decisions made as a teacher, were regarded as essential components found in effective teachers (Edwards & Edick, 2006; Harrison, Smithey, McAfee, & Weiner, 2006). The values for which a teacher was predisposed influenced the teacher's decisions for their own preparation and training, planning for learning, and execution of instruction (Darling-Hammond, 1999; Edwards & Edick, 2006; Kennedy, 2008). The dispositions of a teacher also shaped his or her interactions with students, colleagues, and parents (Edwards & Edick, 2006; Harrison et al., 2006).

The National Council for the Accreditation of Teacher Education, or NCATE, defined disposition in 2002 as: "the values, commitments and professional ethics that influence behaviors toward students, families, colleagues, and communities and affect student learning, motivation,

and development as well as the educator's own professional growth" (Edwards & Edick, 2006). According to NCATE, the beliefs and attitudes a teacher held about the values of caring, fairness, honesty, responsibility, and social justice shaped one's dispositions. The belief that all students can learn was an example of one's dispositions. In addition, there are certain personality traits related to being extroverted or introverted, decisive or indecisive, that also impact one's dispositions. Edwards and Edick (2006) define dispositions as "The qualities that characterize a person as an individual: the controlling perceptual (mental, emotional, spiritual) qualities that determine the person's natural or usual ways of thinking and acting." These values and beliefs required a desire to see them acted upon and the skills to make decisions based on these values (Edwards & Edick, 2006; Kennedy, 2008).

Effective teachers exhibited dispositions of "caring, fairness, and respect; enthusiasm and motivation; reflective practice; positive attitude toward teaching; and friendly and personal interactions with students" (Edwards & Edick, 2006; Harrison et al., 2006). Having high expectations for all students, while not having the same expectations for all students and maintaining a humanistic approach to classroom management were important dispositions found in effective teachers (Harrison et al., 2006).

Kennedy (2008) went to great lengths to illustrate the many dimensions of what makes up one's dispositions. For Kennedy, the performance, or daily practice of the teacher, included many intentional actions outside the classroom including: interacting with colleagues and parents, and planning a curriculum; as well as practices within the classroom, such as: efficiency, organization, and being a positive role model, providing learning activities for students that require complex problem solving, and reasoning or tasks that require deeper thinking. By including decisions relating to learning activities for students, Kennedy (2008) extended

“dispositions” into the arena of pedagogy, but aligning decisions of instructional practice with the beliefs or values of the teacher were intended to add relevance to dispositions. Edwards and Edick (2006) further drew the distinction between dispositions and pedagogy by clarifying disposition as a “pattern of behavior exhibited frequently and in the absence of coercion, constituting a habit of mind that is intentional and oriented to broad goals and is under some conscious and voluntary control” (Edwards & Edick, 2006).

Darling-Hammond (1999) found behavior patterns of “flexibility,” “creativity,” and “adaptability” to have a positive impact on student achievement (Darling-Hammond, 1999). These teachers achieved results by using a variety of teaching strategies and interaction styles. Effective teachers were able to adjust their teaching to fit the needs of various students and the demands of diverse learning goals, topics, and pedagogy.

Teacher actions such as, “enthusiasm, task-oriented behavior, variability of lesson approaches, and student opportunity to learn criterion material” also had a positive impact on student achievement. Teacher clarity was also found to have a significant impact (Darling-Hammond, 1999; Mowrer-Reynolds, 2008). In addition, a teachers’ ability to organize material, ask higher order questions, integrate student ideas, and ask probing questions in response to student comments were also important variables to student learning (Darling-Hammond, 1999). Murray (1980) cited a correlation between student perceptions of the effectiveness of their teachers and the performance of those students in the teachers’ courses (Mowrer-Reynolds, 2008). Mower-Reynolds (2008) also found a positive correlation between teacher enthusiasm and student achievement with “the two dimensions of teacher behavior that correlate highest with student achievement are clarity and enthusiasm,” and findings from fifty studies with

student achievement as the criterion measure in which nine teacher dispositions “appeared to be related to student growth” (Mowrer-Reynolds, 2008).

Kennedy (2008) referred to dispositions involved in teacher effectiveness, such as the ability to foster student learning, including raising scores on standardized achievement tests, motivating students, and fostering personal responsibility and social concern with students. Polk (2006) concluded “there is indeed a relationship between personality and effective teaching” (Polk, 2006).

### **Dispositions and teacher training programs.**

NCATE has required teacher training programs to include dispositions among their assessments of teacher education candidates since 2000 (Harrison et al., 2006). Harrison, Smithey, McAfee, & Weiner (2006) addressed the need to improve the screening process for admittance into the teacher education program at their teacher’s college to effectively screen for dispositions. After changing their screening instrument from one aspect of disposition, “interest in the profession,” in 2001 to include six: caring for students and families, sensitivity to diversity, sense of fairness, sense of efficacy, personal reflection, and sense of professionalism, 33% of candidates were denied admission in 2003 due to failure to meet at least one of these new dispositions. Before the new screening, anyone denied admission had been made on the grounds of nonstandard English usage or for poor presentation.

Edwards and Edick (2006) conducted a study of the attributes of teacher candidates who were at risk for not completing the teacher preparation program at a university in the Midwest. Over a period of five years, 92 teacher candidates were identified as at-risk for failing the program, about 10% of the total number of candidates in the program during this time. The five dispositions found to have the greatest impact on pre-service teacher candidate success were: the

teacher has enthusiasm for the discipline(s) he or she teaches and sees connections to everyday life; the teacher appreciates individual variations within each area of development, shows respect for the diverse talents of all learners, and is committed to help them develop self-confidence and competence; the teacher takes responsibility for establishing a positive climate in the classroom and participates in maintaining such a climate in the school as a whole; the teacher values planning as a collegial activity, and the teacher recognizes his/her professional responsibility for engaging in and supporting professional practices for self and colleagues. Teacher candidates in this study who were at-risk for failing their teacher preparation program were found to lack an “overall ability to form and maintain professional relationships with colleagues – including cooperating teachers, university supervisors, and peers” (Edwards & Edick, 2006).

### **Students recognize dispositions of teachers.**

Mowrer-Reynolds (2008) studied the impact teacher dispositions had on student perception. Interviews of students from 32 elementary classrooms in the Chicago area led to the categorization of teachers into the following: novice, tyrant, pushover, incompetent, witch, victim, friend, problem solver, and the good teacher. “Good teacher” was described as the teacher who motivated students, was helpful, smart, and made learning fun.

Mowrer-Reynolds (2008), reviewed a survey of education students at the University of Idaho. Study subjects were asked to identify five dispositions and/or background experiences from a list of twenty they felt best described exemplary teachers from their past and then ranked them. Analysis of the survey results revealed dispositions outranked background experiences associated with professional skills. “Enthusiasm” was ranked as the most important quality by male and female students. Males identified “subject knowledge” in their top five. No professional background experiences, such as “subject knowledge,” were ranked in the top five

for the females in the survey. Education students in the study cited exemplary teachers as having positively influenced their achievement in school and with their decision to select a career in education.

According to Mower-Reynolds (2008), the influence of a teacher's dispositions on his or her students transcended ethnicity and culture. "Native American Ojibwa college students emphasized that effective teachers possessed the background experiences of being fun, caring, friendly, patient, respectful of students, and staying for the long haul rather than quickly leaving the school and community. African-American children from a successful school in Atlanta indicated that if they don't feel connected to their teachers on an emotional level then they wouldn't learn or put forth effort" (Mowrer-Reynolds, 2008).

Delpit (2006) surveyed adults who had achieved success that was "incongruous with their inopportune beginnings (low income, single parent families, need for special education, foster placements)" (Mowrer-Reynolds, 2008). All survey subjects cited teachers with dispositions of being supportive and encouraging who convinced them that they could succeed as the reason for their success. Mowrer-Reynolds (2008) found "catches your interest" and "teaches in a fun way" to be re-occurring themes in survey responses by students in elementary, middle school, high school, and beyond.

### **Measuring teacher dispositions.**

The Teacher Perceiver Interview (TPI) was a structured personal interview instrument used to assess a teacher candidate's behaviors and beliefs along a set of twelve themes. Scores relating to these themes were compared to those of the "best" teachers. Originally developed in the 1960's by Selective Research International/Gallop, by the 1990's it was being used as a

teacher screening instrument by more than 1200 school districts in the United States (Faurer, 2004; Metzger & Wu, 2008; Ryan & Alcock, 2002; Young & Delli, 2002).

The 12 themes included three intrapersonal, four interpersonal, and five extrapersonal themes. Interviewers were trained to identify “look for” responses consistent with the best teachers. Themes classified as intrapersonal included mission, investment, and focus.

Interpersonal included the themes of empathy, rapport drive, listening, and objectivity.

Individual perception, input drive, activation, innovation, and gestalt made up the extrapersonal theme (Table 1) (Faurer, 2004; Ryan & Alcock, 2002).



Table 1

*Themes and Definitions of the Teacher Perceiver Interview Protocol<sup>a</sup>*

Category	Theme	Definition
Intrapersonal	Mission	The teacher sees education as the foundation for future life and wants to help children grow to improve society
	Investment	The teacher's satisfaction in teaching is derived from the success of the students, and he or she is concerned when students do not succeed
	Focus	The teacher has personal role models and goals that direct him/her in a purposeful direction professionally, and he/she sees teaching as a life-long career
Interpersonal	Empathy	The teacher understands and accepts a student's emotions and is able to perceive and respond directly to a child's immediate emotions
	Rapport Drive	This teacher sees him/herself as a friendly person whom the students like. This teacher works to build strong mutual relationships with students and views this relationship as an essential part of the learning process
	Listening	The teacher sees listening as a way to help others talk and believes the answer to a problem lies within the speaker
	Objectivity	The teacher responds to the total situation and gets all information before responding
Extrapersonal	Individual Perception	The teacher gets to know the needs and interests of each child and builds an individualized learning program based on this knowledge. The teacher provides a variety of activities in order for each student to express his/her creativity
	Input Drive	The teacher is excited about his/her own learning and uses new acquired ideas to help others. This teacher is constantly seeking materials and knowledge from the outside to bring into the classroom
	Activation	The teacher sees student success as a key in helping students learn and knows and uses many ways to get students interested in the learning process
	Innovation	The teacher is constantly looking for, or trying, new or different approaches to learning. The teacher assists students in the development of their creativity in order for the students to become actively involved in the classroom
	Gestalt	The teacher is well organized with a drive towards completion, albeit a perfectionist. The teacher helps students develop a need for closure but does so by working from the students' level

<sup>a</sup>(Faurer, 2004; Ryan & Alcock, 2002)

Dispositions relating to enthusiasm and purpose, cited in the research, most closely aligned with the intrapersonal theme of the TPI. Likewise, motivating students and creating and maintaining professional relationships with colleagues were consistent with the interpersonal theme. The extrapersonal theme included the qualities of creativity, adaptability, clarity, task-oriented, and fosters personal responsibility.

This structured interview approach consisted of three types of questions: situational, observational, and personal. According to the Gallup Organization, “interviewees who receive low scores on the perceiver do not possess the qualities (or talent) necessary to be good teachers. Those with higher scores do have the necessary qualities to succeed as teachers and will perform accordingly” (Faurer, 2004).

In a meta-analysis study of sixteen dissertations, one journal article, and seven TPI validity reports provided by the Gallup Organization, Metzger and Wu (2008) found the TPI to have a modest relationship to certain indicators of teacher quality. “The TPI appears to reflect the values that resonate with principals who hire teachers...” This teacher selection instrument did not measure effective teaching, but may be proven useful in identifying, “teacher candidates who communicate the same professional values and dispositions as the “best” teachers” (Metzger & Wu, 2008). Findings by Metzger and Wu (2008) also suggested a moderate predictive validity of the TPI with a mean effect size of .28 and a corrected value of .32, to be in line with relationships found in other research on hiring interviews, with a mean correlation of .20, .28 when collected for research purposes, for structured, job-related interviews.

In a study by Young and Delli (2002), teachers’ TPI scores were compared to ratings given by each teacher’s principal using a 10-point scale on each of the TPI themes. Principals were provided brief descriptions of each theme prior to rating teachers. The pre-employment

interview scores were found to account for 6.20% of the variance associated with postemployment composite ratings of teachers by their supervising principals. Young and Delli (2002), detailed many limitations to their study, including the difficulties associated with collecting rating-scale data on teachers with little training for the supervising principals on the themes being scored.

### **Summary**

Teacher quality can be characterized as consisting of two key elements: the background experiences in preparation for the role, such as the appropriate pre-service training and meeting the requirements for licensure, and the personal dispositions, including values and beliefs the teacher holds towards student achievement, that impact the teacher's decisions relating to training, practice, planning, instruction, feedback, and communication.

### **Research Design**

The purpose of this study was to determine to what extent a prospective teacher's background experiences and dispositions predicted the performance of future students on criterion-referenced state assessments. The 81 teachers who taught students of equivalent abilities in third, fourth, and fifth grades for one suburban school district in Missouri were ranked according to the spring 2006 average communication arts scaled scores for their class according to the Missouri Assessment Program (MAP). From this ranking, 20 teachers were identified as "top teachers" and 20 teachers were identified as "bottom teachers."

Student placement in teachers' classrooms was determined using a process designed to balance the needs of the students across each classroom in the grade level within each of the eight schools. The smallest school represented in this study had two classroom sections at each grade level and the largest school had five sections at each grade level.

To achieve a balance of student needs across classrooms, students were assigned a score of “1” for remediation or extra support needed, “2” for typical grade level performance, or “3” indicating academic enrichment is needed or that the child’s behavior is exceptional, each for behavior and overall academic performance by the previous year’s teacher. Once all students within a grade level were redistributed into new classes, an average score for each new class was calculated in the areas of academics and behavior for both boys and girls, to determine the level of balance for each class. Adjustments were made to classes when scores revealed an imbalance among groups of students. Principals then assigned teachers to each group of students. This systematic approach for providing classroom rosters with generally balanced needs of students helps minimize the chances some teacher’s rosters were intentionally assigned a disproportionate number of students with academic or behavior needs significantly different from their peers.

Data on the background experiences and dispositions of each of the 40 teachers for the sample were obtained from the teachers’ application files. Background experiences, as independent variables in this study, include the rank of the undergraduate institution attended (College Rank), undergraduate cumulative grade point average (GPA), years of teaching experience as of spring 2006 (Experience ’06), level of advanced degree attained as of spring 2006 (Degree ’06), and the teacher’s score on the Praxis II to fulfill Missouri certification requirements (Praxis). The teacher’s performance on the Teacher Perceiver Interview (TPI) during their initial interview was used to measure their dispositions. The results of the TPI are reported as a composite score for performance on the 12 themes.

### **Measurement of Academic Success**

Scores of students on the communication arts portion of the MAP administered in April 2006 to students in grades three, four, and five, at eight elementary schools from one school

district were used to measure student outputs in this study. The MAP was designed to measure students' knowledge of communication arts and mathematics. The Missouri Department of Elementary and Secondary Education (DESE) contracted with CTB/McGraw-Hill to develop the current grade-level state testing program. A field test was administered in the spring of 2005 that served as the basis for the construction of the 2006 operational assessment. In the spring of 2006, Missouri students in grades three through eight and 11 participated in assessments of communication arts. Individual student results were reported as a scaled score. These scaled scores were then translated to a performance level for each student in one of four ratings: "advanced" (the highest level), "proficient" (or standard level of performance expected under the No Child Left Behind Act), "basic," or "below basic" (the lowest performance level).

### **Data Analysis**

Linear Discriminant analysis was used to determine to what extent the background experiences and dispositions of an applicant during the teacher screening process were predictive of membership in the two groups, "top teacher" and "bottom teacher". In addition, an independent-samples *t* test was conducted to evaluate the predictability each of the independent variables had on outputs by their students on state assessments.

## **Results**

### **Subjects**

Participants in this study were elementary teachers of students in grades three through five from one suburban school district in Missouri. A total of 40 participants, with 36 female (90%) and four male (10%) were included in the study. The teaching experience of participants ranged from one to 27 years, with a mean of 8.03 (10.85 for top teachers, 5.20 for bottom teachers). Thirty-one of the participants (77.5%) in the study had completed their master's

degrees (85% of top teachers, 70% of bottom teachers). The TPI scores for participants ranged from four to 12, with a mean of 8.03 (8.25 for top teachers, 7.80 for bottom teachers). Praxis scores were available on 23 of the participants (nine for top teachers, 14 for bottom teachers). The mean Praxis score on the known participants was 177 (178.20 for top teachers, 184.20 for bottom teachers).

### **Independent Variables and Descriptive Statistics**

Linear Discriminant analysis was used, first to determine if a combination of college rank, GPA, experience '06, degree '06, and TPI, could predict membership into either of the groups: top teacher or bottom teacher (Table 2). A second analysis was conducted using the same five variables as the first, but with the addition of Praxis (Table 3). Praxis scores were included in the analysis to determine their impact on predicting membership, but including Praxis scores resulted in a smaller sample size which affected the mean and standard deviation scores.

Table 2

*Discriminant Analysis Group Statistics of Independent Variables Excluding Praxis (n=40)*

Teacher Group	Measure	<i>M</i>	<i>SD</i>
Top Teacher	College Rank	2.65	0.81
	GPA	3.33	0.33
	Experience '06	10.85	8.39
	Degree '06	0.85	0.37
	TPI	8.25	1.45
Bottom Teacher	College Rank	2.85	0.59
	GPA	3.37	0.36
	Experience '06	5.20	4.14
	Degree '06	0.70	0.47
	TPI	7.80	1.28
Total	College Rank	2.75	0.71
	GPA	3.35	0.34
	Experience '06	8.03	7.13
	Degree '06	0.78	0.42
	TPI	8.03	1.37

Table 3

*Discriminant Analysis Group Statistics Including Praxis (n=23)*

Teacher Group	Measure	<i>M</i>	<i>SD</i>
Top Teacher	College Rank	2.56	0.73
	GPA	3.27	0.20
	Experience '06	7.56	6.97
	Degree '06	0.67	0.50
	TPI	7.89	1.05
	Praxis	178.22	9.51
Bottom Teacher	College Rank	2.79	0.70
	GPA	3.27	0.33
	Experience '06	4.79	2.83
	Degree '06	0.71	0.47
	TPI	7.71	1.54
	Praxis	184.21	6.13
Total	College Rank	2.70	0.70
	GPA	3.27	0.28
	Experience '06	5.87	4.93
	Degree '06	0.70	0.47
	TPI	7.78	1.35
	Praxis	181.87	8.00

Discriminant analysis classification was computed for the level of predictability the independent variables, without Praxis, had on the cases. The results in Table 4 show that of the 20 cases in the top teacher group, 11 (55%) were predicted. In the bottom teacher group, 17 (85%) were predicted. Of the total sample of 40 cases, the overall number of cases classified correctly was 28, or 70% of the sample.

Table 4

*Discriminant Analysis Classification Results Excluding Praxis<sup>a</sup> (n=40)*

Measure	Teacher Group	<u>Predicted Group Membership</u>		Total
		Top Teacher	Bottom Teacher	
Count	Top Teacher	11	9	20
	Bottom Teacher	3	17	20
Percent	Top Teacher	55	45	100
	Bottom Teacher	15	85	100

a. 70% of original grouped cases correctly classified.

Discriminant analysis classification was computed again, this time including the independent variable Praxis (n=23). Results in Table 5 reveal that of the nine cases in the top teacher group, five (55.60%) were predicted. Of the 14 cases in the bottom teacher group, 11 (78.60%) were predicted. Of the total sample of 23 cases, the overall number of cases classified correctly was 16, or 69.60% of the sample.



Table 5.

*Discriminant Analysis Classification Results Including Praxis<sup>a</sup> (n=23)*

Measure	Teacher Group	Predicted Group Membership		Total
		Top Teacher	Bottom Teacher	
Count	Top Teacher	5	4	9
	Bottom Teacher	3	11	14
Percent	Top Teacher	55.6	44.4	100
	Bottom Teacher	21.4	78.6	100

a. 69.6% of original grouped cases correctly classified.

An independent-samples *t* test was conducted to evaluate the predictability each of the independent variables had on student performance. Table 6 shows the results were significant for the independent variable Experience '06,  $t(40) = 2.70$ ,  $p = .01$ . Top teachers ( $M = 10.85$ ,  $SD = 8.39$ ) on average had 5.65 years more teaching experience than bottom teachers ( $M = 5.20$ ,  $SD = 4.14$ ) (Table 2). The 95% confidence interval for the difference in means for Experience '06, was 1.37 to 9.94.

The independent-samples *t* test was not significant for the independent variables Praxis,  $t(23) = -1.68$ ,  $p = .12$ , College Rank,  $t(40) = -.89$ ,  $p = .38$ , GPA,  $t(40) = -.33$ ,  $p = .74$ , Degree '06,  $t(40) = 1.13$ ,  $p = .27$ , or TPI,  $t(40) = 1.04$ ,  $p = .30$  (Table 6).

Table 6

*t-Test for Equality of Means (N=40<sup>a</sup>)*

Measure	t	df	Sig. (2-tailed)	M	95% Confidence Interval of the Difference	
					Lower	Upper
Praxis	-1.68	12.30	.12	181.87	-13.75	1.76
College Rank	-.89	34.59	.38	2.70	-.66	.26
GPA	-.33	37.54	.74	3.27	-.26	.19
Experience '06	2.70	27.73	.01	5.87	1.37	9.94
Degree '06	1.13	35.86	.27	0.70	-.12	.42
TPI	1.04	37.46	.30	7.78	-.43	1.33

a. Praxis N=23

### Discussion

The purpose of this study was to determine whether dispositions or any background experiences easily known to hiring officials during the application and screening process best predict the success of potential teachers as measured by class average scaled scores on state assessments in communication arts for students in grade three through five. The analysis of various aspects of background experiences and dispositions revealed that a teacher's years of teaching experience was significant in relation to student achievement, and the combination of college rank, GPA, experience, degree, and TPI as a measure of dispositions, successfully predicted membership as a bottom teacher with 85% accuracy.

The findings of this study supported the research that a teacher's experience had a positive impact on student learning, especially in the first few years of a teacher's career (Goe, 2007; Sion, 2004; NCTAF, 1997; Odden et al., 2004; Darling-Hammond & Youngs, 2002). Further study would be needed to clarify if there is a limit to when additional experience failed to achieve additional results, as was the claim of Odden et al. (2004) and Darling-Hammond and Young (2002).

Since the subjects of this study were all from the same school district, taught the same curriculum with the same resource materials, and all received similar in-service training, the findings related to experience addressed many of the conclusions by Carlsom et al. (2004) that experience took into account other background experiences, such as in-service training, that were difficult to isolate for study. College Rank was not found to predict group membership. This leaves other possible variables, such as in-service training, the experience of working with students, colleagues, parents, and supervisors over time, and research or other self study as possible explanations for the predictability of experience for membership in the bottom group.

Further study could clarify the impact these in-service factors associated with experience have on predicting group membership as a bottom teacher. If, for example, teachers averaging 10 years experience who had only taught in one school district served as a stronger predictor of membership then teachers with similar overall experience who had taught in multiple districts. These results might better isolate the impact of in-service professional development training.

Findings of this study on the impact of experience failed to reach the level cited by NCTAF (1997), however, that when teaching experience was combined with a master's degree and scores on licensing examinations, these teacher background experiences accounted for about 40% of measured variance in student learning using measures of reading and math achievement in grades one through 11, more than any other variable (NCTAF, 1997).

A teacher's GPA was not found to be significant with regard to student achievement on state assessments. Closer analysis revealed the findings in the area of grade point average were consistent with the research. The lowest GPA among the cases was 2.79, which was higher than the lower of two comparison groups Pigge (1968) found to distinguish "C" teachers, with GPA between 2.00 and 2.50, from "A" teachers, with GPA between 3.20 and 4.00. The mean GPA

for both top teachers and bottom teachers in this study fell within the range Pigge (1968) classified as “A” teachers. A GPA score of 2.79 was also high enough to support the findings of James & Dumas (1976) that GPA loses its predictive qualities above a score of 2.30.

The acquisition of an advanced degree was not found to be significant for predicting student achievement on state assessments. This finding was consistent with the research of Darling-Hammond (1999) and Hanushek (1997), that a teacher with a bachelor’s degree was as likely to elicit high performance from students as a teacher with a master’s degree. This study did not test the most commonly held finding about the positive impact of an advanced degree, that of an advanced degree in mathematics for the performance of secondary students in mathematics.

College rank was not determined to be significant. The data set for this study was limited to teachers from one school district and, primarily, to the undergraduate institutions within three hours drive from this school district. This limited the study to teacher preparation programs mostly within the same region which may have qualities more similar to each other than to schools in other regions of the country. The universities outside the region were each represented by one or two teachers, not large enough samples to predict student achievement.

Interview results on the TPI, measuring dispositions, were not found to be significant. Given that all the subject data for this study originated from the same school district over the course of fifteen years of hiring decisions by the same human resources manager sets some controls in the study. A minimum standard of a TPI score of six was in place for applicants to “pass” the interview portion of the application process. This standard was consistent with the recommendations by the Gallop Organization. Only one case (2.50%) in this study had a score lower than the minimum standard, so the other 39 cases (97.5%) met the stated purpose of

screening out applicants lacking the dispositions to be effective teachers, according to the Gallop Organization.

Praxis II scores were not found to be significant predictors of student performance on state assessments, nor was the predictability of group membership as a top teacher impacted by the inclusion of Praxis II. However, predictability of bottom teachers dropped by nearly 10% when Praxis II scores were included. Praxis II results were only available on 23 of the subjects, compared to a sample size of 40 for the other variables. Having Praxis II scores on all 40 subjects may have led to different findings for the impact of Praxis II scores on group membership predictability or on student achievement.

The Praxis II was intended to screen out potential teachers who failed to meet a minimum acceptable level of performance. Had the study included teachers who had failed to pass the Praxis II and this failure predicted membership in a group, then the study would have been true to the intent of the Praxis II as a sorting instrument based on a minimum acceptable standard.

### **Limitations of the Study**

The state standards assessed, and the bank of questions used in the state assessment, underwent significant changes in 2006 and the results from that year may or may not have been consistent with the results these teacher subjects achieved from their students in previous or subsequent years. Using the classroom scaled scores from multiple years may have identified a different set of top teachers and bottom teachers who achieved consistent results over time. However, since the 2006 assessment was new to all teachers, it was less likely some teachers could gain an unfair advantage by being familiar with the test.

A restricted range of independent variable data limited the ability to challenge performance thresholds found by researchers in GPA, scores on licensure exams, and

performance on the TPI for dispositions. The school district in this study was consistently recognized as a high performing school district by the state and may have has a higher percentage of top teachers than other school districts, while its bottom teachers may not have been so ranked when compared with teachers from lower performing school districts.

Sorting the 40 cases by the school where the teachers taught would have allowed for an analysis of school effect. The influence a principal or school has on hiring teachers and providing in-service training might impact student achievement results that are different from other schools. Including each teacher's school as an additional variable in the study might impact predictability of student achievement and/or membership as a top teacher or bottom teacher.

### **Implications for Hiring Officials**

Hiring officials have a responsibility to impact student success through the selection of the most effective teachers. This study more accurately predicted low teachers than high teachers, so this carries important implications for improving the efficiency of the process of screening applicants' resumes, letters of recommendation, and college transcripts.

Based on the results of this study, it is recommended that hiring officials first screen out those applicants whose undergraduate GPA is below 2.50, have little or no teaching experience, or who do not meet minimum standards on interview scales for dispositions. Based on the background research for this study, dispositions that hiring officials should screen for include: enthusiasm for teaching and learning, motivating a diverse group of learners, establish and maintain collaborative and professional relationships with colleagues, creativity, flexibility, adaptability, task-oriented, teach with clarity, or model and foster personal responsibility. It is suggested that whether or not a potential teacher has an advanced degree and the undergraduate

institution attended also be considered with the other variables mentioned to identify potential bottom teachers, but on their own, only years of teaching experience predicted student achievement in this study, making this the most important variable to predict bottom teachers.

After likely bottom teachers are removed, the findings from this study suggest time and resources would be more wisely invested in interviewing and assessing remaining applicants to identify the best possible teachers. Any teacher screening practice that includes bringing all applicants thorough assessments of compatibility would be a waste of precious resources, according to the findings of this study.

### **Summary**

The decision to hire a particular teacher is arguably the most important decision school district officials make that impact student success. Making hiring decisions that are supported by the research can increase the odds of selecting a top teacher while focusing resources on where they will achieve the greatest result.

This study revealed the information learned about prospective teachers during the application process can be used to predict “bottom teachers” with 85% accuracy, with teaching experience being the most important predictor of student success. Eliminating potential bottom teachers from consideration early in the screening process could allow resources to be directed to follow up assessment of the remaining applicants, increasing the likelihood of selecting teachers who will achieve high levels of success in students.

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